Safe Handling of Sharp Devices in Animal Research & Teaching Environments

These biosafety practices apply to all UT animal-related activities under the purview of the UT Institutional Biosafety Committee (IBC) and Institutional Animal Care and Use Committee (IACUC).

Many animal research and teaching procedures involve blood collection and processing or harvesting of tissues. These procedures often require the use of devices with features that can puncture or cut skin. Common examples of sharp devices include:

- Hypodermic or suture needles
- Scalpel blades
- Pasteur pipettes
- Capillary tubes
- Microscope slides
- Knives

Penetration of the skin with a biologically contaminated sharp device is one of the most efficient means of transmitting infection. In the animal care setting, the potential for zoonotic agents must always be considered. Therefore, it is essential for all personnel who perform tasks involving animals and sharp devices to do so in a manner that minimizes the potential for occupational injuries sustained from sharp devices.

1. **Get trained in proper techniques before using sharp devices on research or client animals.**

   Improper use of sharps devices and poor technique can increase the potential for distress in the subject animals, which will greatly increase your risk of sustaining a sharps exposure or other injuries. Assure that you are properly trained by senior personnel experienced in the new technique and equipment in a controlled setting before employing these on the job.

2. **Do not leave sharp devices out in the environment any longer than necessary.**

   - Do not leave sharps unattended when preparing them for use.
   - For disposable sharps, have a sharps container readily available, preferably within arm's reach for disposal of sharps immediately after use. Dispose of sharps directly into the container and immediately after use if your procedures permit you to do so.
   - For reusable sharps devices (i.e., knives, scissors), have a storage container that will enclose the sharp end (i.e., a bucket or enclosed tray) readily available at the point of use.
   - Do not use syringes with needles attached as specimen containers if other alternatives are available. If other alternatives are not available, the needle and syringe should be placed in a puncture-resistant, leak proof secondary container with a secure lid for transport of the specimen to the lab. If you must recap under this circumstance, use a one-handed scoop technique whenever feasible, as outlined at the end of this document. Alternatively, the sharp end may be enclosed by carefully inserting it into a sterile rubber stopper for transport or the specimen can be injected through a sterile rubber septum into a suitable transport container without need to recap needle.
   - Do not leave sharp devices in your lab coat pockets!

3. **Minimize two-handed techniques with sharps.**
   Recapping needles, or passing sharp devices (i.e., scalpels) from one person to another, are common examples of two-handed techniques that can lead to hand injuries with contaminated sharps. Eliminate these techniques whenever possible, or modify the technique to eliminate the risk to the non-dominant hand.

   - If a sharp device must be passed between personnel, adopt a system to prohibit both personnel from grasping the device at the same time.
   - When conducting tissue collection, have one person in control of the sharp device. Assisting personnel should have their hands as far away from the cutting area as feasible and pay attention to the person handling the sharp device. Additionally, the use of cut-resistant gloves (especially on the non-dominant hand) is recommended for procedures that present a likelihood of exposure to a cutting device.

- Do not recap needles if your procedure allows for immediate disposal of the device. If your animal is anesthetized or restrained in a manner that limits your potential for contact, a sharps container should be placed within arm's reach and the device immediately deposited in the sharps container.
- If your procedure requires you to recap a needle, use a one-handed scoop technique whenever feasible. This technique is described in at the end of this document.
- When cleaning and processing reusable sharps, use cleaning tools that limit the potential for contact between your hands and the sharps surfaces.

4. **Do not put excessive force on a sharp device.**

   Do not bend or break sharps. These actions increase your risk of sustaining a puncture wound and must not be practiced.

5. **Use an appropriate sharps container for disposal of sharps waste.**
   Whether in the clinic or in the field, proper sharps containers must be used for sharps disposal.

   - An appropriate container is leak-proof on the sides and bottom, has a means of permanent closure, bears the biohazard symbol, and is designed for sharps collection.
   - Make sure the lid is properly installed before putting the container into use.
   - Close the lid for transport or storage purposes. Permanently close the lid for disposal purposes.

   Please Note: Makeshift containers such as milk jugs, fluids bottles, bleach bottles, etc. are not appropriate sharps containers for use on the job. While there are some regulatory exemptions to waste regulations for household and farm operations, these exemptions do not extend to laboratory personnel, veterinarians or researchers in the field. Additionally, any sharps waste that is submitted to the UT Veterinary Teaching Hospital, or to any of the UT lab animal operations for disposal must be collected in an appropriate sharps container as defined above.

Recommended Practices

Example of a kit that permits for the safe disposal and transport of sharps in the field

Some sharps containers are equipped with a needle removal device that eliminates the need to remove needles from syringes by hand

6. **Do not overfill sharps containers.**

   - Sharp items should drop freely into a sharps container for the safest means of disposal. If items do not freely fall, your container is too full or you are using a container that is not the right size for the items you need to dispose of.
   - Do not force a sharp into a sharps container and NEVER retrieve an item from the container with your hand!

The OSHA Bloodborne Pathogens Standard & Animal-Related Activities

Under the Occupational Safety and Health Administration (OSHA) Bloodborne Pathogens (BBP) Standard, recapping of needles is generally prohibited and the use of sharps devices with safety features is required in the human patient care setting.

The OSHA BBP Standard applies to work settings where personnel are required to handle human-derived materials and thus it does not apply to the majority of animal research and diagnostic environments. The Standard does apply to those personnel who are exposed to human-derived materials (i.e., tumor cells) during the introduction and harvest of such materials from research animals. The regulatory provision for the use of sharps devices with safety features does not extend to these applications. However, the use of such devices is strongly recommended whenever possible. Please contact the UTK Biosafety Office at 974-1938 for assistance regarding sharps with safety features and further information on the OSHA BBP Standard.

Recapping: Special Circumstances for Animal-Related Activities

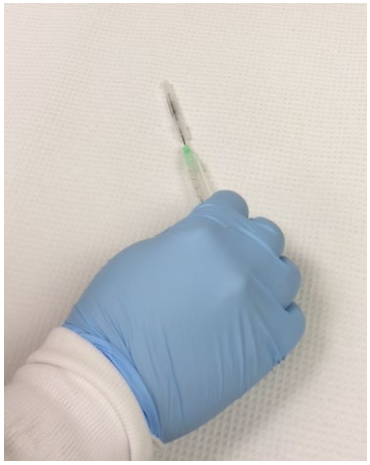
The prohibition of recapping needles under the OSHA BBP Standard was based on several years of collected data demonstrating that the majority of sharps injuries in human healthcare occur from recapping (62%) and improper disposal techniques. Although this data was collected in a different occupational setting, many of the techniques and devices are the same as those used in the animal research and clinic environments. The safety message is the same- recapping needles is an infectious disease exposure risk.

Under special circumstances when a syringe and needle must be used as a specimen container, it is recognized that recapping may be necessary (as previously described under #2). Outside of those circumstances, recapping should not be performed unless the circumstances are such that you will further increase your risk of a needlestick exposure by not recapping. If such circumstances exist in a research or teaching area, that area must generate a written procedure outlining the specific circumstances under which personnel will recap to address their safety risk. This written procedure must be available and accessible at applicable departmental sites for regulatory by institutional or external inspectors.

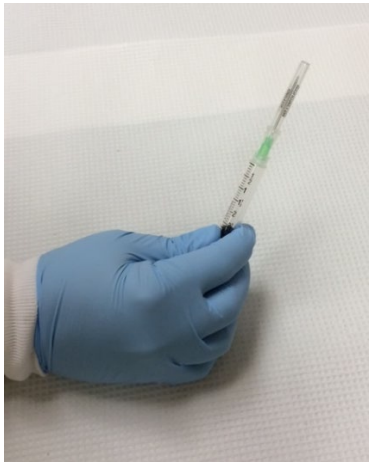
Please Note: If the conditions of the procedure do not warrant the practice of recapping for your protection, then you must not do so. If you do, this action can be cited by safety and research compliance inspectors as an unsafe action, regardless of the applicability of the OSHA Bloodborne Pathogens Standard.

One-Handed Scoop Technique for Recapping Needles

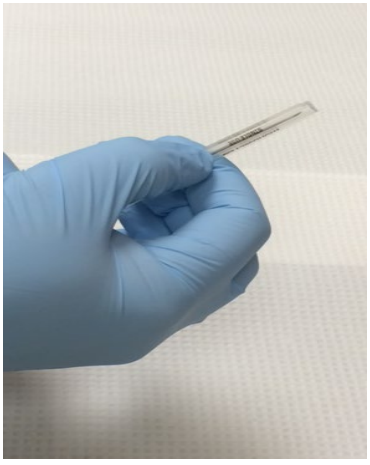
Use this technique to recap needles without putting your non-dominant hand in harm's way. This technique is appropriate if you have a situation where the needle and syringe must serve as the specimen container for a diagnostic sample.



1 **Place cap on flat surface while sharp is in use. Slide sharp end into the cap opening.**



2 **"Scoop" the cap up and over the sharp end.**



3 **Secure the cap using your thumb.**